UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

May 26, 2006

Rick A. Muench, President and
Chief Executive Officer
Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, KS 66839

SUBJECT: WOLF CREEK GENERATING STATION - NRC PROBLEM IDENTIFICATION AND RESOLUTION INSPECTION REPORT 0500482/2006010

Dear Mr. Muench:

On February 17, 2006, the Nuclear Regulatory Commission (NRC) completed the onsite portion of a team inspection at your Wolf Creek Generating Station. The enclosed report presents the results of this inspection. On February 17, 2006, we discussed the preliminary results of the inspection with you and other members of your staff. The team continued in-office document reviews and conducted a final exit meeting with Mr. M. Sunseri, Vice President Oversight, and other members of your staff on May 10, 2006.

This inspection examined activities conducted under your license as they relate to the identification and resolution of problems, compliance with the Commission's rules and regulations and with the conditions of your license. The team reviewed approximately 270 performance improvement requests and corrective work requests and work orders, associated apparent causes and root cause analyses, as well as supporting documents. In addition, the team reviewed crosscutting aspects of NRC and licensee-identified findings and interviewed personnel regarding the safety conscious work environment.

On the basis of the samples selected for review, the team concluded that your processes to identify, prioritize, evaluate, and correct problems were generally effective; thresholds for identifying issues remained appropriately low and, in most cases, corrective actions were adequate to address conditions adverse to quality. However, inconsistent problem evaluations and corrective actions continue to result in some self-disclosing and NRC-identified violations and findings. Finally, we've determined that a safety conscious work environment exists at your facility.

The report documents four findings that were evaluated under the risk significance determination process as having very low safety significance (Green). The NRC has also determined that one violation was associated with these findings. This violation is being treated as a noncited violation because it is of very low safety significance and because it has been entered into your corrective action program consistent with Section VI.A of the Enforcement Policy. If you contest the violation or the significance of this noncited violation, you should provide a response within 30 days of the date of the inspection report, with the basis for your

denial, to the U.S. Nuclear Regulator Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Wolf Creek Generating Station facility.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Anthony T. Gody, Chief
Operations Branch
Division of Reactor Safety

Docket: 50-482
License: NPF-42

Enclosure:
NRC Inspection Report 05000482/2006010
w/Attachment: Supplemental Information

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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Dockets:	50-482
Licenses:	NPF-42
Facility:	Wolf Creek Nuclear Operating Corporation
Location:	Wolf Creek Generating Station 1550 Oxen Lane NE Burlington, Kansas
Dates:	January 30 through February 17, 2006, Onsite February 21 through May 10, 2006, In-office
Team Leader:	W. McNeill, Acting Senior Reactor Inspector, Engineering Branch 1
Inspectors:	T. McKernon, Senior Operations Engineer, Operations Branch S. Cochrum, Senior Resident Inspector, Projects Branch B J. Kirkland, Project Engineer, Projects Branch E
Approved by:	Anthony T. Gody, Chief Operations Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000482/2006010, 1/30/2006 - 2/17/2006, Wolf Creek Generating Station; Biennial Problem Identification and Resolution Inspection.

The inspection was conducted by an acting senior reactor inspector, a senior operations engineer, a senior resident inspector and a project engineer. One Green noncited violation and three Green findings of very low safety significance were identified during this inspection. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

Identification and Resolution of Problems

The team reviewed approximately 270 performance improvement requests, corrective work requests, work orders, associated apparent and root cause analyses, as well as supporting documents and corrective actions to assess problem identification and resolution activities. Overall, corrective action procedures and processes were generally effective; thresholds for identifying issues were low and, in most cases, corrective actions were adequate to address conditions adverse to quality. However, inconsistent problem evaluations and corrective actions resulted in some self-disclosing and NRC identified violations and findings. The licensee had identified corrective actions to address these performance problems.

Based on the interviews conducted, the team concluded that a safety conscience work environment existed at Wolf Creek Generating Station. The team determined that employees felt free to raise safety concerns to their supervision, the employee concerns program, and the NRC. The team received a few isolated comments regarding the lack of knowledge of the corrective action program, an increased workload caused by the corrective action process and a concern about the effectiveness of knowledge transfer because of an aging workforce. However, the interviewees all believed that potential safety issues were being addressed and there were no instances identified where individuals had experienced adverse actions for bringing safety issues to the NRC. The team determined that licensee management was aware of the perceptions and was taking action to address them.

Cornerstone: Mitigating Systems

Green: The team identified a finding for the licensee's failure to establish appropriate testing procedures for the operation of the turbine-driven auxiliary feedwater pump following notification (10 CFR Part 21 report issued April 12, 2005) of a component defect, which could substantially and adversely affect turbine-driven auxiliary feedwater pump operation. Specifically, the licensee did not adequately address appropriate testing, acceptance criteria, and test frequency to assure that the turbine-driven auxiliary feedwater governor operability remained unaffected by a potential null voltage shift that could prevent the fail safe mode of operation of the governor, as described in the 10 CFR Part 21 report. Since

there were no indications of drifting of the null voltage for the past two surveillances, the licensee concluded that no additional actions were required to address the 10 CFR Part 21 report. Contrary to the vendor recommended actions, the licensee did not establish a monitoring frequency in accordance with recommended actions. This finding had crosscutting aspects associated with problem evaluation.

The failure to establish appropriate testing, acceptance criteria, and test frequency for the operation of the turbine-driven auxiliary feedwater pump was considered a performance deficiency. The finding was more than minor because if left uncorrected, the finding could become a more significant safety concern and affected the mitigating system cornerstone objectives of ensuring the availability, reliability, and capability of systems that respond to events to prevent undesirable consequences. The finding was determined to be of very low safety significance because it did not result in a loss of function in accordance with Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1 (Section 4OA2e(2)i).

Green: The team identified a finding for the failure to establish appropriate procedures for the operation of the component cooling water pump. Specifically, the licensee did not establish procedures to include appropriate acceptance criteria for component cooling water pump axial shaft movement that has existed for approximately 18 years. The licensee's procedure did not contain any vendor acceptance criteria to ensure axial shaft movement did not result in a failure of the pump during a postulated accident. The licensee did not evaluate the long-term impact from wear to the bearing fit surfaces, wear particles in oil samples, or long-term cyclic fatigue to adjacent piping and other components. This issue had crosscutting aspects associated with problem evaluation.

The failure to establish a procedure with appropriate acceptance criteria was considered a performance deficiency. The finding was more than minor because it affected the mitigating systems cornerstone attribute of procedure quality and affected the cornerstone objective of ensuring availability, reliability and capability of systems to respond to events. The finding was of very low safety significance because, despite the fact that the condition was not properly evaluated, the affected equipment remained operable consistent with Generic Letter 91-18, Revision 1 (Section 4OA2e(2)ii).

Green: The team identified a finding for the failure to establish appropriate procedures for the inspection of buried safety-related electrical cables. Specifically, the licensee did not establish procedures to include acceptance criteria to determine if buried safety-related electrical cables were subject to the degradation described in NRC Information Notice 2002-12, "Submerged Safety-Related Electrical Cables." The licensee did not develop a maintenance activity to inspect the underground cables for degraded or damaged jacketing, contrary to industry operating experience, which provided examples of visual inspections that discovered degraded cable jacketing. This issue had crosscutting aspects associated with problem evaluation.

The failure to establish a maintenance activity with appropriate acceptance criteria was considered a performance deficiency. The finding was more than minor because if left uncorrected the finding could become a more significant safety concern and it affected the mitigating system cornerstone objectives of ensuring the availability, reliability, and capability of systems that respond to events to prevent undesirable consequences. The finding was determined to be of very low safety significance because it did not result in a loss of function in accordance with Generic Letter 91-18, Revision 1 (Section 4OA2e(2)iv).

Cornerstone: Barrier Integrity

Green: The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to take adequate corrective actions to address spent fuel pool foreign material issues. Specifically, the licensee did not determine the source of the foreign material and prevent it from entering the spent fuel pool on multiple occasions. The spent fuel pool is considered a foreign material exclusion zone in which no foreign material is allowed. Although it was considered a low probability event, foreign material in the spent fuel pool could cause problems with spent fuel pool cooling equipment or could be carried into the core during refueling and result in degradation of the fuel assembly cladding. As such, the introduction of foreign material into the spent fuel pool was considered a significant condition adverse to quality. This issue had crosscutting aspects associated with problem evaluation and resolution.

The failure to take effective corrective actions to determine and correct the source of spent fuel pool foreign material was considered a performance deficiency. The finding was more than minor because it affected the barrier integrity cornerstone attribute of cladding performance and human performance (foreign material exclusion). This finding was of very low safety significance because it is associated with a fuel barrier concern and did not affect reactor coolant system barrier performance (Section 4OA2e(2)iii).

REPORT DETAILS

4 OTHER ACTIVITIES (OA)

4OA2 Identification and Resolution of Problems

The team based the following assessments, in part, on issues that were identified in the assessment period, which ranged from October 2004 (the last biennial problem identification and resolution inspection) to the end of the on-site part of the inspection on January 31, 2006. The referenced issues came from all inspection efforts conducted during the period. The examples are divided into two groups. The first group (current issues) includes problems that were identified during the assessment period where the performance concern also occurred during the same period. The second group (historical issues) includes issues that were identified during the assessment period but all the performance deficiencies occurred outside the period of interest.

a. Effectiveness of Problem Identification

(1) Inspection Scope

The team reviewed items selected across the seven cornerstones to determine if problems were being properly identified, characterized, and entered into the corrective action program. Specifically, the team reviewed plant logs and maintenance records and verified that conditions adverse to quality, identified in these processes, were entered into the corrective action program. In addition, the team reviewed a sample of licensee audits and self-assessments, trending reports, system health reports, and various other reports and documents related to the corrective action program.

The team interviewed station personnel and evaluated corrective action documentation to determine the licensee's threshold for identifying problems. In addition, in order to assess the licensee's handling of operator experience, the team reviewed the licensee's evaluation of selected industry operating experience reports, including licensee events, NRC generic letters, bulletins, information notices, and generic vendor notifications.

(2) Assessment

The team determined that problems were properly identified and entered into the corrective action program. For calendar year 2005, the licensee had written over 3500 performance improvement requests and 4800 work requests/work orders, which was similar to the previous year. The example listed below, involving containment atmosphere radiation gaseous monitors, was considered an isolated example where the licensee failed to identify that the equipment was inoperable as required.

Current Issue

Example: The NRC identified that the licensee had failed to identify and take adequate corrective measures to restore operability of containment radiation monitors (NRC Inspection Report 05000482/2004004-01).

b. Prioritization and Evaluation of Issues

(1) Inspection Scope

The team reviewed performance improvement requests and operability evaluations to assess the licensee's ability to evaluate the importance of the conditions adverse to quality. The team reviewed a sample of performance improvement requests, apparent cause, and root cause analyses to ascertain whether the licensee properly considered the full extent of conditions, generic implications, common causes, and previous occurrences.

In addition, the team reviewed licensee evaluations of selected industry operating experience, including licensee event reports, NRC generic letters, bulletins and information notices, and generic vendor notifications to assess whether issues applicable to Wolf Creek Generating Station were appropriately addressed.

The team performed a historical review of performance improvement requests covering the last 5 years for the main steam, essential service water, circulating water, reactor protection, and residual heat removal systems.

(2) Assessment

The team concluded that problems were generally prioritized and evaluated in accordance with the licensee's corrective action program guidance and NRC requirements. The team found that for the sample of root cause reports reviewed, the licensee was generally self-critical and thorough in evaluating the causes of significant conditions adverse to quality. Nevertheless, in a number of examples listed below, notable weaknesses were identified by the inspectors where the licensee failed to properly evaluate abnormal equipment performance or conditions adverse to quality. The licensee had not identified this issue as a possible trend nor had they established a corrective action to address performance problems in this area.

Current Issues

Example 1: The NRC identified that the licensee had failed to evaluate vendor recommended actions contained in a Part 21 report (Section 4OA2e(2)i).

Example 2: The NRC identified that the licensee had failed to evaluate and effectively implement actions to prevent spent fuel pool foreign material (Section 4OA2e(2)iii).

Historical Issues

Example 3: The NRC identified that the licensee failed to evaluate actions to address industry operating experience (Section 4OA2e(2)iv).

Example 4: The NRC identified that the licensee failed to evaluate actions to address longstanding component cooling water pump problems (Section 4OA2e(2)ii).

c. Effectiveness of Corrective Actions

(1) Inspection Scope

The team reviewed performance improvement requests and other plant records associated with corrective actions to verify that corrective actions related to the issues were identified and implemented, including corrective actions to address common cause or generic concerns. The team sampled specific technical issues to evaluate the adequacy of the licensee's operability determinations.

Finally, the team reviewed a sample of performance improvement requests that addressed past NRC identified violations for each affected cornerstone to ensure that the corrective actions adequately addressed the issues as described in the inspection. The team also reviewed a sample of corrective actions closed to the work management processes to ensure that corrective actions were still appropriate and timely.

(2) Assessment

Overall, the inspectors found that the licensee's corrective actions were generally effective in addressing conditions adverse to quality. Nevertheless, isolated current examples were identified by the NRC involving ineffective corrective actions.

Current Issues

Example 1: The NRC identified that the licensee had failed to evaluate and effectively implement actions to prevent spent fuel pool foreign material (Section 4OA2e(2)iii).

Example 2: The NRC identified that the licensee had failed to take adequate corrective measures to prevent subsequent failures of the auxiliary feedwater flow transmitters (NRC Inspection Report 05000482/2005004-02).

d. Assessment of Safety-Conscience Work Environment

(1) Inspection Scope

The team interviewed 18 individuals from different departments representing a cross section of functional organizations and supervisory and non-supervisory personnel. These interviews assessed whether conditions existed that would challenge the establishment of a safety-conscience work environment.

(2) Assessment

The team concluded that a safety conscience work environment existed at Wolf Creek Generating Station. Based on interviews, the inspectors found that station personnel felt free to enter issues into the corrective action program and raise safety concerns with their supervision, to the employees concern program, and to the NRC. The team received some isolated comments regarding station personnel having a lack of knowledge of the corrective action program, an increased work load caused by the

corrective action process, and a concern of knowledge transfer because of an aging workforce. However, all the interviewees believed that potential safety issues were being addressed and there were no instances identified where individuals had experienced adverse actions for bringing safety issues to the NRC. The team discussed these perceptions with licensee management and they agreed to take action to address them.

e. Specific Issues Identified During This Inspection

The team identified the following issues during this inspection.

(1) Inspection Scope

During this assessment, the team performed the inspections scoped in Sections 4OA2a(1), 4OA2b(1), 4OA2c(1), and 4OA2d(1) above.

(2) Findings and Observations

i. **Finding 05000482/2006010-01; Inadequate Procedure to Address a 10 CFR Part 21 Notification of a Potential Safety-Related Component Defect**

Introduction. The team identified a Green finding for the licensee's failure to establish appropriate testing procedures for the operation of the turbine-driven auxiliary feedwater (TDAFW) pump following notification in a 10 CFR Part 21 (Part 21) report issued April 12, 2005, of a component defect, which could substantially and adversely affect TDAFW pump operation. Specifically, the licensee did not adequately address appropriate testing, acceptance criteria, and test frequency to assure that the TDAFW governor operability remained unaffected by a potential null voltage shift that could prevent the fail-safe mode of operation of the governor as described in the Part 21 report.

Description. In February 2005, the Perry Nuclear Power Plant experienced a Woodward governor failure that resulted in a Part 21 failure. Specifically, the null voltage setting on the compensating governor drifted preventing the proper output signal. Because of the null voltage drift characteristic of this governor and since a specific cause was never determined for previous events, the manufacturer issued the Part 21 report to ensure users were aware of this characteristic that could affect operability of safety-related systems.

The licensee's review of the Part 21 report found it to be applicable to their facility, since this type of governor is used on the safety-related TDAFW pump. The null voltage shift phenomenon described in the Part 21 report would cause the TDAFW governor valve to fail at the minimum position. This would prevent the TDAFW turbine from being manually started in the event of a loss-of-control signal and prevent the failsafe mode of operation of the governor.

The Part 21 report recommended that licensees monitor governor null voltage during each surveillance run or at monitoring frequency based on operating experience of the

governor. The licensee monitored the null voltage during the next quarterly TDAFW pump surveillance test conducted on June 16, 2005, and compared the values to a quarterly TDAFW pump surveillance test conducted on December 15, 2004. The licensee found no indications of drifting of the governor null voltage and concluded no additional actions were required for the Part 21 report.

The licensee conducted two additional quarterly surveillance tests since June 2005, but neither test monitored the null voltage. Surveillance Test Procedure STS AL-103, "TDAFW Pump Inservice Pump Test," Revision 39, only requires monitoring if system engineering requests data. When questioned by the team, the licensee stated they were not available during the tests and did not request data to be recorded. And, since no null voltage drifting was observed during the two earlier surveillance's, no further monitoring of the null voltage was planned. Contrary to the vendor recommended actions, the licensee did not establish a governor null voltage monitoring frequency in accordance with the Part 21 report.

Analysis. The failure to establish appropriate testing, acceptance criteria, and test frequency for the operation of the TDAFW pump was considered a performance deficiency. The finding was more than minor because if left uncorrected the finding could become a more significant safety concern and affect the mitigating system cornerstone objectives of ensuring the availability, reliability, and capability of systems that respond to events to prevent undesirable consequences. The finding was determined to of very low safety significance because it did not result in a loss of function in accordance with Generic Letter 91-18, "Information to Licensees Regarding NRC Inspection Manual Section on Resolution of Degraded and Nonconforming Conditions," Revision 1. The licensee documented the team's concerns in Performance Improvement Request 2006-0366. This issue had crosscutting aspects associated with problem evaluation.

Enforcement. Because no violation of regulatory requirements occurred and the finding was entered into the licensee's corrective action program (Performance Improvement Request 2005-2241), this issue is being treated as a finding (FIN 05000482/2006010-01, Inadequate Procedure to Address Part 21 Recommended Actions).

ii. **Finding 05000482/2006010-02: Inadequate Procedure For Long-Standing Component Cooling Water Pump Problems**

Introduction. The team identified a Green finding for the failure to establish appropriate procedures for the operation of a component cooling water pump. Specifically, the licensee did not establish procedures to include appropriate acceptance criteria for component cooling water pump axial shaft movement that has existed for approximately 18 years.

Description. Component Cooling Water Pumps A and B have exhibited chronic axial shaft movement since 1988. The axial shaft movement typically occurred during low flow conditions when the affected pump is supplying flow to the safety-related loads only (a typical post-accident configuration). Since 1988, numerous work orders have

documented the history of this phenomenon, however, licensee corrective actions to date have only attempted to tighten the fit clearances in the bearing housings to physically restrict shaft movement. A vendor inspection determined the excessive movement was the result of loose bearing housing caps and recommended maintaining the caps with a clearance of .001 inch to restrict shaft movement. However, once the bearing fit clearances opened up, the shaft movement return within a few months and bearing cap clearances opened to greater than .001 inches. The team noted that the licensee's Procedure STS EG-100A, " Component Cooling Water Pumps A/C Inservice Pump Test," Revision 17, did not contain any vendor acceptance criteria to ensure the excessive axial shaft movement did not result in pump failure. The team also noted that the licensee had not evaluated the long-term reliability impact of axial shaft movement from wear to the bearing fit surfaces, wear particles in oil samples, nor long-term cyclic fatigue to adjacent piping and other components. The corrective actions to date have only addressed the effects and not the cause of the movement.

Analysis. The failure to establish a procedure with appropriate acceptance criteria was considered a performance deficiency. The finding was more than minor because it affected the mitigating systems cornerstone attribute of procedure quality and affected the cornerstone objective of ensuring availability, reliability, and capability of systems to respond to events. The finding was of very low safety significance because the affected equipment remained operable consistent with Generic Letter 91-18, Revision 1. The licensee documented the team's concerns in Performance Improvement Request 2006-0372. This issue had crosscutting aspects associated with problem evaluation.

Enforcement. Because no violation of regulatory requirements occurred and the finding was entered into the licensee's corrective action program (Performance Improvement Request 2005-3058), this issue is being treated as a finding (FIN 05000482/2006010-02, Inadequate Procedure for Long-standing Component Cooling water Pump Problems).

iii. **Noncited Violation 05000482/2006010-03: Inadequate Corrective Actions to Address Spent Fuel Pool Foreign Material**

Introduction. The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, for the failure to take prompt effective corrective actions to address a potential significant condition adverse to quality. Specifically, the licensee did not evaluate the source and implement effective corrective actions to prevent numerous foreign material intrusions into the spent fuel pool.

Description. The spent fuel pool and core are considered foreign material exclusion zones in which no foreign material is allowed. Foreign material in the spent fuel pool could cause problems with spent fuel pool cooling equipment or be carried into the core during refueling, which could cause degradation of the fuel assembly cladding. On April 7, 2004, the licensee initiated Performance Improvement Request 2004-0986, which identified foreign material in the spent fuel pool transfer canal. The object was a 2.5-inch piece of orange plastic. Based on color, the licensee initially determined it came from the cask handling crane buss bar covers. Followup inspections performed

on the crane bus bars discovered a missing splice cover, which was replaced, but the licensee was unable to determine if it was the source of the foreign material or the length of time the splice cover was missing. The licensee considered this an isolated occurrence and no additional action was taken. On April 20, 2004, Performance Improvement Request 2004-1084 was initiated that stated multiple pieces of foreign material were found in the spent fuel pool in the past week. This performance improvement request was closed to the previous performance improvement request with no additional actions taken. On November 9, 2004, Performance Improvement Request 2004-3005 documented additional orange plastic foreign material in the spent fuel pool similar to the previous material. Again, the licensee determined the material was from the crane splice covers, however, no missing splice covers were apparent and no additional actions were taken to determine the source. On March 30, 2005, three pieces of orange plastic material were identified in the spent fuel pool. Performance Improvement Request 2005-0824 was initiated, which conducted an apparent cause determination. The licensee's apparent cause determination, again concluded the material came from the crane bus bar insulator covers as the crane moves from location to location because of misaligned bus bars. Corrective actions based on this conclusion included inspections of the bus bar and alignments of bus bars to prevent further degradation. However, the inspection found no missing pieces of bus bar insulation. Since no damage to the bus bar insulation was found, Performance Improvement Request 2005-0824 was closed with no further actions or evaluations planned to determine the cause of the foreign material in the spent fuel pool.

Analysis. The failure to take prompt effective corrective actions to determine and correct the source of spent fuel pool foreign material was considered a performance deficiency. The finding was more than minor because it affected the barrier integrity cornerstone attribute of cladding performance and human performance (foreign material exclusion). This finding was of very low safety significance because it is associated with a fuel barrier concern and did not affect reactor coolant system barrier performance. The licensee documented the team's concerns in Performance Improvement Request 2006-0372. This issue had crosscutting aspects associated with problem evaluation and resolution.

Enforcement. The team identified a violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," which states, in part, for significant conditions adverse to quality, measures shall assure the cause is determined and that actions taken preclude repetition. Although it was considered a low probability event, foreign material in the spent fuel pool could cause problems with spent fuel pool cooling equipment or could be carried into the core during refueling and result in degradation of a fuel assembly cladding. As such, the introduction of foreign material into the spent fuel pool was considered a significant condition adverse to quality. Contrary to this requirement, the licensee failed to take adequate corrective actions to evaluate the cause and prevent foreign material from entering the fuel pool on multiple occasions. Because the violation was of very low safety significance and was entered into the licensee's corrective action program (Performance Improvement Request 2005-0824), this violation is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000482/2006010-03, Inadequate Corrective Actions to Address Spent Fuel Pool Foreign Material).

iv. **Finding 05000482/2006010-04: Inadequate Procedure to Address Industry Operating Experience Regarding Submerged Cables**

Introduction. The team identified a Green finding for the failure to establish appropriate procedures for the inspection of buried safety-related electrical cables. Specifically, the licensee did not establish procedures to include acceptance criteria to determine if buried safety-related electrical cables were subject to the degradation described in NRC Information Notice 2002-12, "Submerged Safety-Related Electrical Cables."

Description. In 2002, the NRC issued Information Notice 2002-12 to address concerns with submergence of buried electrical cables that feed safety-related equipment. During inspections of underground manholes at Brunswick Nuclear Plant, the inspectors observed corroded and broken cable supports, cable jacket tears, leaking ductbanks, inoperable sump pumps, and inoperable level control circuits. Based on the lack of routine monitoring or inspection of the cables at several plants that had experienced failures, the NRC issued the Information Notice 2002-12 to ensure licensee's were aware of the conditions that could affect operability of their safety-related systems.

The licensee's review of the information notice found it to be applicable to their facility since underground cables were used on the safety-related equipment. The licensee's review recommended engineering evaluate the need for inspections of buried cables based on concerns addressed in the information notice, which included inspection for and repair of degraded cable jacketing, inspection of cable supports or components, preventing water from entering manholes, and inspection of sump pumps and mechanisms. The licensee's evaluation determined that the cable supports could be affected but concluded that no inspections of the buried cables were required because degraded or damaged cable jacketing was not considered a failure mode. Based on this evaluation, the licensee developed a maintenance activity, PM File: 36621, "Work Instructions," to inspect the underground cable supports, however, no inspections of the cables for degraded or damaged jacketing were developed, even though the industry operating experience provided examples of visual inspections that discovered degraded cable jacketing. During the last inspection of the cable supports, 20 of the 21 manholes required pumping down prior to inspecting the supports. When questioned by the team if any cables were also visually inspected, the licensee stated the cables were usually under water and could not be easily viewed or inspected for damaged or degraded jacketing.

Analysis. The failure to establish a maintenance activity with appropriate acceptance criteria was considered a performance deficiency. The finding was more than minor because if left uncorrected, the finding could become a more significant safety concern and it affected the mitigating system cornerstone objectives of ensuring the availability, reliability, and capability of systems that respond to events to prevent undesirable consequences. The finding was determined to be of very low safety significance because it did not result in a loss of function in accordance with Generic Letter 91-18, Revision 1. The licensee documented the team's concerns in Performance Improvement Request 2006-0390. This issue had crosscutting aspects associated with problem evaluation.

Enforcement. Because no violation of regulatory requirements occurred and the finding was entered into the licensee's corrective action program (Performance Improvement Request 2006-0390), this issue is being treated as a finding (FIN 05000482/2006010-04, Inadequate Procedure to Address Industry Operating Experience Regarding Submerged Cables).

4OA6 Exit Meeting

The team conducted an preliminary exit meeting on February 17, 2006, with Mr. R. Muench, President and CEO, and other members of the staff. The team conducted a final exit meeting with Mr. M. S. Sunseri, Vice President Oversight, and other members of the staff on May 10, 2006. The licensee acknowledged the findings. While the team reviewed some proprietary information during the inspection, the team returned all proprietary information to the licensee prior to the exit meeting.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

D. Berry, Superintendent Operations Support
R. Calia, Manager Performance Improvement
A. Critchley, Supervisor Corrective Action
D. Fehr, Manager Information Service
T. Garrett, Vice President Engineering
S. Gifford, Shift Manager
S. Hedges, Vice President Operations and Plant Manager
S. Henry, Superintendent Operations
S. Koenig, Manager Chemistry/Health Physics
J. Makar, Manager Systems Engineering
B. Masters, Supervisor Design Engineering
R. Muench, President and CEO
G. Neisis, Manager Design
G. Pendergrass, Manager Support
E. Ray, Manager Operations
A. Stull, Vice President and Chief Admin. Officer
M. Sunseri, Vice President Oversight
M. Westman, Manager Training
D. Williams Superintendent Instrument and Control
J. Yunk, Manager Human Resources

NRC Personnel

T. Rhodes, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000482/2006010-01	FIN	Inadequate Procedure to Address a 10 CFR Part 21 Notification of a Potential Safety-Related Component Defect (Section 4OA2e(2)i)
05000482/2006010-02	FIN	Inadequate Procedure for Long-standing Component Cooling Water Pump Problems (Section 4OA2e(2)ii)
05000482/2006010-03	NCV	Inadequate Corrective Actions to Address Spent Fuel Pool Foreign Material Inadequate (Section 4OA2e(2)iii)
05000482/2006010-04	FIN	Inadequate Procedure to Address Industry Operating Experience Regarding Submerged Cables (Section 4OA2e(2)iv)

LIST OF DOCUMENTS REVIEWED

The following documents were selected and reviewed by the team to accomplish the objectives and scope of the inspection and to support any findings:

Audits

K-627 Corrective Action Audit Report
K-617 Corrective Action and Nonconforming Material, Parts, or Components Audit Report

Calculations

EF-030
EF-036
XX-S-023

560-001-DC1, KCI Engineering Consultants, "EJHV8811A/B MOV Motor terminal voltage and motor output torque," Revision 0

Drawings

M-082-00013-W09, Component Cooling Water, Revision 09
M-11EF01, System Flow Diagram, Essential Service Water, Revision 09
M-12EF01, Piping & Instrumentation Diagram, Essential Service Water System, Revision 19
M-12EF02, Piping & Instrumentation Diagram, Essential Service Water System, Revision 22

Noncited Violations Reviewed

Number	Title
2004003-01	Failure to Obtain a Radiological Survey Prior to Moving Materials from a Contaminated Area
2004003-02	Failure to Provide Adequate Contaminated Area Controls
2004004-01	Failure to Identify and Correct a Significant Condition Adverse to Quality
2004004-02	Failure to Follow Procedure, Which Resulted in a Reactor Trip
2004006-01	Simulator Fidelity
2004006-02	Inadequate Design Control for Overcurrent Settings for Emergency Diesel Generator Supply Fan Breakers
2004008-01	Failure to Control Radioactive Material
2005003-01	Failure to Perform an Adequate Survey to Identify a Radiation Area

Number	Title
2005004-01	Failure to Follow Station Procedures Results in Transfer of Water from Vct to Rwst
2005004-02	Inadequate Corrective Actions Fail to Prevent Subsequent Failure of Auxiliary Feedwater Flow Transmitters
2005004-03	Failure to Perform an Exit Whole Body Count
2005004-04	Manipulation of Plant Component Without Proper Authorization Results in Inoperable Fire Protection Pumps

NRC Information Notices

1993-64, Periodic Testing and Preventive Maintenance of Molded Case Circuit Breakers
1999-17, Problems Associated with Post-Fire Safe-Shutdown Circuit Analyses
2001-04, Neglected Fire Extinguisher Maintenance Causes Fatality
2002-12, Submerged Safety-Related Electrical Cables
2004-09, Corrosion of Steel Containment and Containment Liner

Operability Evaluations

20884
20893

Quick Hit Assessments

QH 04-374 Trend ENG
QH 05-052 Trend SUP ENG 4th Qtr 2004
QH 05-083 Trend ENG - Change Package Revisions
QH 05-327 Trend ESP ENG
QH 05-045 SYS ENG - Operability Evaluation OF-05-001
QH 05-230 Eng - Evaluation of Performance Information
QH 05-306 SYS ENG - System Health Reports

Surveillance Tests

STS CV-210B, ECCS SI and RHR Inservice Check Valve Test, dated April 12, 2002
STS CV-210B, ECCS SI and RHR Inservice Check Valve Test, dated November 11, 2003
STS CV-210B, ECCS SI and RHR Inservice Check Valve Test, dated April 26, 2005

Temporary Modifications

05-018-00
05-016UU
04-013NB
04-006GE

Performance Improvement Requests

1996-0316	2004-2684	2005-0846	2005-1632	2005-2871
1996-2466	2004-2731	2005-0940	2005-1679	2005-2915
1997-0991	2004-2758	2005-0969	2005-1801	2005-2922
1999-1100	2004-2813	2005-0975	2005-1822	2005-2946
2001-0098	2004-2905	2005-0987	2005-1835	2005-3124
2001-0915	2004-2945	2005-0996	2005-1841	2005-3186
2001-1351	2004-2948	2005-1028	2005-1963	2005-3191
2001-1465	2004-3005	2005-1046	2005-1965	2005-3195
2001-1600	2004-3058	2005-1050	2005-1966	2005-3250
2001-1710	2004-3077	2005-1078	2005-1968	2005-3258
2001-1922	2004-3099	2005-1105	2005-1969	2005-3283
2001-2906	2004-3165	2005-1108	2005-1970	2005-3290
2001-3104	2004-3191	2005-1112	2005-1977	2005-3322
2001-3108	2004-3305	2005-1128	2005-1982	2005-3333
2002-1472	2004-3308	2005-1155	2005-2004	2005-3352
2002-1543	2004-3309	2005-1215	2005-2026	2005-3358
2002-2125	2004-3333	2005-1228	2005-2076	2005-3362
2003-0258	2004-3338	2005-1248	2005-2142	2005-3368
2003-0281	2004-3383	2005-1256	2005-2149	2005-3416
2003-0717	2004-3428	2005-1267	2005-2161	2005-3542
2004-0089	2004-3448	2005-1279	2005-2162	2006-0006
2004-0463	2004-3453	2005-1296	2005-2163	2006-0021
2004-1683	2005-0038	2005-1357	2005-2180	2006-0098
2004-1781	2005-0066	2005-1358	2005-2182	2006-0141
2004-1955	2005-0072	2005-1365	2005-2201	2006-0184
2004-1963	2005-0168	2005-1396	2005-2241	2006-0201
2004-2182	2005-0233	2005-1452	2005-2242	2006-0240
2004-2199	2005-0361	2005-1471	2005-2250	2006-0241
2004-2425	2005-0362	2005-1478	2005-2262	2006-0366
2004-2426	2005-0391	2005-1517	2005-2275	2006-0369
2004-2427	2005-0395	2005-1529	2005-2310	2006-0370
2004-2432	2005-0441	2005-1535	2005-2416	2006-0372
2004-2459	2005-0592	2005-1536	2005-2418	2006-0373
2004-2478	2005-0696	2005-1558	2005-2507	2006-0388
2004-2636	2005-0712	2005-1578	2005-2679	2006-0391
2004-2644	2005-0783	2005-1593	2005-2693	2006-0392
2004-2677	2005-0824	2005-1621	2005-2757	2006-0393

Procedures

AI 28A-005, Common Cause Analysis, Revision 0

AI 28A-006, Apparent Cause Evaluation, Revision 0

AI 28A-011, PIR Initiation, Revision 4

AI 28A-012, PIR Screening, Revision 6

AI 28A-013, PIR Evaluation and Action Plans, Revision 1

AI 28B-005, Hardware Failure Analysis, Revision 1

AP 16A-001, Reportable Events - Evaluation and Documentation, Revision 12

AP 16C-006, MPAC Work Request/Work Order Process Controls, Revision 9A

AP 21E-001, Clearance Orders, Revision 17

AP 22A-001, Screening, Prioritization and Pre-approval, Revision 7

AP 23M-001, WCGS Maintenance Rule Program, Revision 5

AP 28A-001, Performance Improvement Request, Revision 25

AP 28A-007, Nonconformance Control, Revision 3

AP 28-011, Resolving Deficiencies Impacting SSCs, Revision 1

AP 10-106, Fire Preplans, Revision 3

OFN EF-033, Loss of Essential Service Water, Revision 9

STN OQT-001A, Operations “A” Train Quarterly Tasks, Revision 20

STN OQT-001B, Operations “B” Train Quarterly Tasks, Revision 24

STN PE-037A, Train A Heat Exchanger Flow and DP Trending, Revision 9

STN PE-037B, Train B Heat Exchanger Flow and DP Trending, Revision 10

SYS EJ-120, Startup of A Residual Heat Removal Train, Revision 44

STS AL-103, TDAFW Pump Inservice Pump Test, Revision 39

STN EF-020A, Essential service water Train Warming Line Verification, Revision 3

STS EF-100A, Essential service water System Inservice Pump A & essential service water A Discharge Check Valve Test, Revision 28

STS-KJ-005A, Manual/Auto Start, Synchronization & Loading of Emergency D/G NE01, Revision 44

STS MT-024A, Functional Test of 480 and 120 Volt Molded Case Circuit Breakers, Revision 9

Work Orders

00-221215	04-263615	05-048256	05-271281	05-275562
01-227383	04-265332	05-048998	05-271288	05-275565
02-034521	04-265512	05-049982	05-271304	05-275580
02-233496	04-265598	05-050883	05-271379	05-276624
02-234639	04-265608	05-051444	05-271602	05-277426
02-244538	04-266699	05-051456	05-271835	05-278445
02-245193	04-266760	05-051461	05-271883	05-278836
03-252036	04-267575	05-257735	05-271944	05-278874
03-253208	04-290087	05-269403	05-272482	05-278878
03-253653	05-277426	05-269479	05-272868	05-278949
03-257735	05-047131	05-269675	05-272920	05-279118
04-044929	05-047284	05-270671	05-273301	05-279929
04-045039	05-048010	05-270696	05-274360	05-280045
04-259469	05-048033	05-270722	05-274397	05-274397
04-260586	05-048052	05-271155	05-274935	

Work Requests

00-022138	04-045722	05-048426	05-049982	05-051456
04-264535	04-046233	05-049893	05-051444	05-051461
04-045039	04-260586			

Miscellaneous

Cold Regions Technical Digest No. 91-1, March 1991, “Frazil Ice Blockage of Intake Trash Racks”

Common Cause Analysis AI 28A-005

Configuration Change Package 07361

Control Room Logs (Selected)
Corrective action review board meeting on January 31, 2006

Incident Investigation Team Report 96-002

ITIP 2460

Joint Owner's Group (JOG) Motor-Operated Valve Periodic Verification Program Summary, Revision 0, February 2004

082-00039 W08, "Instruction Manual for Component Cooling Water Pumps"
Maintenance Rule data Base

New PIRs for screening review team meeting, 1/31/06 – 2/3/06

PIR Performance Trend AI 28E001

Training Needs Analysis 2004-1320-0

PM File 29063

PM File 36621

Reportability Evaluation Request 2005-037

Safeguards Event Log, 3rd Quarter 2004 – 4th Quarter 2005

Self Assessment Report SEL 05-22, "Wolf Creek ALARA Program"

Summary Component Qualification Report Seismic & Environmental Testing Westinghouse Molded Case Circuit Breakers Reactor Coolant System/CPE (93)-43

Technical Specifications, Amendment 162

Technical Specification For Motor Control Centers For the Standardized Nuclear Unit Power Plant System (SNUPPS) No. 10466-E-018(Q)

Oversight Quarterly Station Performance Report, July 2005 through September 2005
Updated Safety Analysis Report, Revision 18

Vibration Analysis Report 0104-2005

Westinghouse Electric Company Technical Bulletin TB-04-13: Replacement Solutions for Obsolete Class Molded Case Circuit Breakers, UL Testing Issues, Breaker Design Life and Trip Band Adjustment

Westinghouse Letter to Wolf Creek Generating Station dated September 1, 2005 "Evaluation of the Sulfate Excursion at Wolf Creek Generating Station Spring of 2005"

10 CFR 21 Reporting of Defects and Non-Compliance- Engine Systems, Inc. Report No.

10 CFR 21-0089, Rev. 0, Woodward Governor Compensating EG Series Actuators

Initial Information Request

The period of interest covers the last two years or the time since the last PI&R inspection, whichever is longer. Electronic format is preferred but not required. Requested items include:

All procedures governing or applying to the corrective action program, including the processing of information regarding generic communications and industry operating experiences

Procedures and descriptions of any informal systems, used by engineering, operations, maintenance, security, training, and emergency planning for issues below the threshold of the formal corrective action program

A list of all corrective action documents PIRs that were initiated or closed during the period, including PIRs number, description of issue and significance classification

A separate list of all PIRs closed to other programs, such as MAIs/WOs, ERs, etc.

A copy of each significant event review team report and root cause analysis report for the period (not necessarily the entire PIR)

Copies of PIRs associated with noncited violations

Copies of PIRs associated with repetitive problems or trends

Copies of PIRs associated with ineffective or untimely corrective actions

List of all self assessments or QA assessments/audits for the period

Quality assurance audits and surveillances, and functional self assessments of corrective action activities

Control room logs

Security event logs (access and only during on-site inspection)

Radiation protection event logs

List of risk significant systems based on risk achievement worth (RAW) and "0% availability CDF"

Searchable (preferred) list of all maintenance action items/work orders

List of all SSC's placed in or removed from the maintenance rule a(1) category for the period

Human performance and corrective action trend information.

All corrective action program or metrics used for tracking effectiveness of the corrective action program for the period

NOTE: Additional documentation will be requested during the inspection.